

# THE ANIMALS' MANIFESTO

Preventing COVID-X



A call to "Build Forward" to create a more **sustainable, equitable, and humane** world, and *prevent the next pandemic.*

# A CHALLENGE TO CHANGE

COVID-19 has had a devastating impact globally, from the massive loss of human life to the rapid decline of the global economy.

While some called COVID-19 a "black swan"--an event that could not have been predicted--the risk of a pandemic of this magnitude is something that experts have been cautioning about for years. And there have been recent warning shots in the form of other diseases transmitted from non-human animals to humans, including Swine Flu, Avian influenza, and Ebola, to name just a few. The COVID-19 crisis makes absolutely clear that to reduce the risk of future world-stopping pandemics, we must fundamentally reorient our relationship with animals, from a relationship of exploitation to a relationship of mutuality. We must do this on a basis of urgency.

As parts of the world begin to look forward to rebuilding, recovering and rebounding from this crisis, calls to "build back better" and even to "build forward" have reverberated across laptops in living rooms and home offices worldwide. COVID-19 should clarify the multiple problems with our current consumption patterns, and stimulate clear-eyed approaches to meaningfully address this. Within new policies, our poor treatment of animals, now clearly responsible for harm to ourselves, can finally be addressed.

In this manifesto, more than 60 nongovernmental organisations working across the globe call on world leaders, international institutions, political parties, and all stakeholders to stop and assess the direction of current COVID-19 response efforts, realign these with the glaring need for transformative change, and finally address humanity's exploitation of animals.

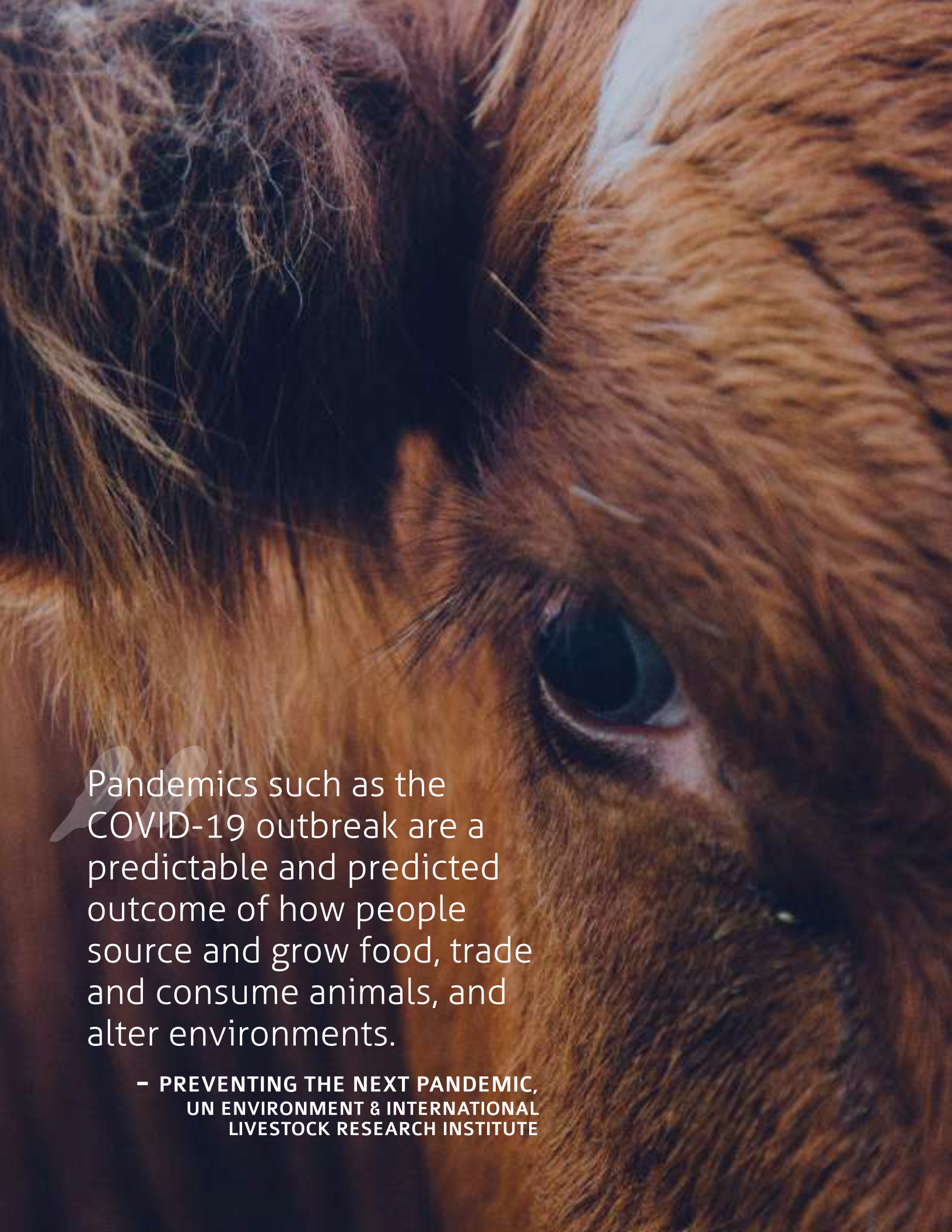
Specifically, we are calling for:

- Steps to incorporate One Health and One Welfare into policies. One Health recognises the linkages between human, animal and environmental health, while One Welfare extends this concept to other aspects of wellbeing, such as food security, livelihoods and humane treatment. Incorporating a One Welfare approach is key to ensuring an equitable, sustainable and humane future.
- Concrete policies and actions that
  - transform farming systems;
  - change food consumption habits;
  - end the unnecessary exploitation of wildlife;
  - increase vaccine development efficiencies; and
  - ensure the wellbeing of animals in communities, such as companion animals and working equines.
- Visionary, prudent, and necessarily bold leadership by global institutions at the center of the COVID-19 response, including the UN General Assembly, UN Environment Programme, the UN Development Programme, and international financial institutions.

We recognise the real risk that business as usual will pick up and continue unabated. We also assert that such an approach holds dire consequences for human communities, animals and Earth's support systems. This is a moment of opportunity to meet the enormous challenges COVID-19 has illuminated and together change our trajectory to ensure the wellbeing of all. Time is of the essence. Work must begin immediately and extend through the decade. Our ability to prevent the next pandemic, and secure our common future, depends on it.



\*The full list of signatories is available on page 31.



Pandemics such as the COVID-19 outbreak are a predictable and predicted outcome of how people source and grow food, trade and consume animals, and alter environments.

– PREVENTING THE NEXT PANDEMIC,  
UN ENVIRONMENT & INTERNATIONAL  
LIVESTOCK RESEARCH INSTITUTE

# CONTENTS

6	SECTION 1 <b>Introduction</b>
10	SECTION 2 <b>Shifting dietary demand for protein</b>
13	SECTION 3 <b>Transforming agricultural systems</b>
17	SECTION 4 <b>Reducing use and exploitation of wildlife</b>
21	SECTION 5 <b>Vaccine development</b>
23	SECTION 6 <b>Domestic animals and communities</b>
26	SECTION 7 <b>Key Global Actions to Prevent Future Pandemics</b>
31	<b>Full List of Signatories</b>
32	<b>References</b>

---

SECTION 1

# Introduction



The COVID-19 crisis is one of the worst health emergencies the world has witnessed for a century, with over 34 million cases and one million deaths at the time of writing.<sup>1</sup> The pandemic has exposed fundamental flaws in the way we relate to and exploit animals, and demonstrates how this exploitation can have enormous economic and social repercussions across the world.<sup>2</sup>

Governments already have announced the provision of trillions of dollars in recovery funding, but the World Bank predicts the deepest global recession in decades, leaving lasting scars through lower investment, fragmentation of global trade and supply linkages, and an erosion of human capital through suspended work and schooling. Hundreds of millions of people will lose their jobs and livelihoods, and inequality and food insecurity will accelerate.<sup>3</sup> The ultimate costs to global and national economies, and the knock-on social and societal impacts, have yet to be seen, although, inevitably, poorer people and developing countries will suffer the most.

As governments, intergovernmental organisations, and international financial institutions implement policies and strategies to address the impact of COVID-19, it is critical that these reorient the relationship between humans, animals and nature to one of mutuality, rather than exploitation. By embracing a One Welfare approach which recognises the interconnections between humans, animals and the environment, it will be possible to develop and implement policies that will not only reduce the risk of future pandemics, but foster win-win solutions to a number of the most pressing global problems we face.

## **Human-Animal Relationships and Zoonotic Disease**

COVID-19 emerged as a zoonotic disease, and the fact that 75% of all emerging infectious diseases are shared between humans and animals is increasingly common knowledge in the COVID-19 era. While it has been a particularly devastating global pandemic, COVID-19 has been preceded by a slew of other zoonotic diseases, including SARS, MERS, Ebola, HIV, H1N1pdm09 (swine flu), Nipah Virus, Avian Influenza and Zika, to name a few. Moreover, the emergence of such diseases is accelerating as human interactions with animals, both domestic and wild, increase. As highlighted in the July 2020 UN Environment Programme (UNEP) and the International Livestock Research Institute (ILRI)'s new report [\*Preventing the Next Pandemic\*](#):

*"pandemics such as the COVID-19 outbreak are a predictable and predicted outcome of how people source and grow food, trade and consume animals, and alter environments."*

The report goes on to state that:

*"most emerging infectious diseases--whether in wildlife, domestic animals, plants or people--are driven by human activities such as agricultural intensification, wildlife use and mis-use, and human-induced landscape changes, interacting in unpredictable ways that can have negative outcomes."*

The power to limit the proliferation of pandemics and to forestall future ones, which could be as or more deadly and disruptive as COVID-19, is in our hands. Achieving this will inevitably require multi-layered, transformative changes, and well-considered systemic transitions. But this is the only way to ensure a healthy and sustainable future for humans, animals, and the ecosystems on which all life depends.

A preventative approach to pandemics is far more cost-effective than a reactive one, given that "a single zoonotic outbreak can incur many trillions of US dollars in costs across the globe", as we have witnessed with COVID-19.<sup>4</sup> A recent analysis published in the journal *Science* suggested that the cost of implementing key preventative measures over the next ten years (based on present day values), including protecting wildlife and forests, would equate to just 2% of the estimated financial damage caused by COVID-19.<sup>5</sup>

## **Leveraging One Health and One Welfare in Recovery from COVID-19**

What we have learned in the wake of COVID-19 provides the opportunity -- and urgency -- for us to "build back better", or even, to "build forward". This calls for a transformative approach that elevates sustainable, humane, equitable and resilient systems. It also calls for a multidisciplinary approach -- eliminating the siloed, short-term thinking that has brought us our existing inadequate and vulnerable socio-economic systems.

The emerging concept of One Welfare,<sup>6</sup> as an extension of One Health, is a multidisciplinary approach that analyzes and leverages the synergies between human wellbeing, animal welfare and environmental health to produce stronger, more resilient systems with fewer vulnerabilities. Whereas One Health focuses specifically on health impacts, One Welfare further eliminates silos by recognizing that linkages between human wellbeing, animal welfare and the environment affect more than just health, and indeed impact issues as diverse as food security, food safety, livelihoods, climate change, and biodiversity. One Health and One Welfare frameworks offer the potential to remove previous siloes and explore how policies can accommodate and empower the overlaps between human, animal and environmental wellbeing, supporting the "build back" to a sustainable and resilient future.

In our post-COVID-19 world, mainstreaming One Health and One Welfare approaches across all sectors will not only drastically reduce the risk and impact of future pandemics, it will also reduce the risk of other looming disasters, including the accelerating climate change and biodiversity loss crises. By doing so it can improve outcomes for both human wellbeing and environmental health in the global recovery from COVID-19.

Importantly, achieving this will hinge on the concept of animal welfare being incorporated into policies, assessments and reporting. It will also require policies for "building back better" to specifically include the need for good animal welfare practices and pandemic prevention.



## Beyond One Welfare Synergies, Animal Use has Ethical Implications

Scientific exploration of animal welfare science and animal behavior, cognition and sentience has been accelerating over the last few decades. As our understanding of these fields continues to expand, so do the ethical implications. While these concepts can be challenging to apply across cultural understandings, it is important that this scientific evidence is integrated rather than siloed, and it is clear that there is already broad support for such an approach. With 182 countries having adopted the animal welfare standards developed by the World Organisation for Animal Health (OIE), it is clear that animal welfare is now an issue of global concern. However, more must be done. Currently, animal welfare is not afforded the political priority deserved from many parts of the UN system including: the Sustainable Development Goals; UNEP; and across Multilateral Environmental Agreements covering animals.

Indeed, in 2019 the United Nations Global Sustainable Development Report (GSDR) identified animal welfare as an issue missing from the Sustainable Development Goals, stating:

*"The clear links between human health and well-being and animal welfare is increasingly being recognized in ethics- and rights-based frameworks. Strong governance should safeguard the well-being of both wildlife and domesticated animals with rules on animal welfare embedded in transnational trade."*<sup>7</sup>

Further, while accepting various animal uses, the OIE's Global Animal Welfare Strategy states these are *"carrying an associated ethical responsibility to ensure any such use is humane, as defined through the OIE's international standards for animal welfare, in recognition of the sentience of animals."*

## Recommendations for the Integration of One Health and Welfare Approaches

This briefing provides a summary of policies we believe need to be mainstreamed and included in international policy frameworks and sectors in order to reorient our relationship with animals to one of mutuality instead of exploitation, and by doing so safeguard our shared future and planet. They focus on One Health and One Welfare synergies that will strengthen policies and financing schemes to "build back better."

The initial three sets of recommendations correspond with the first three anthropogenic drivers of zoonotic disease emergence identified in UNEP's recent report on preventing future pandemics:

1. Shifting dietary demand for protein to safer and more sustainable sources
2. Transforming agricultural systems
3. Reducing use and exploitation of wildlife

However, COVID-19 is infringing on animal welfare in additional ways, with linkages to human wellbeing and environmental health, and therefore recommendations are also made regarding:

4. Vaccine development
5. Domestic animals and communities

Finally, we identify additional crucial policies and associated financing needed from specific stakeholders.

A vibrant display of fresh produce in a market stall. The foreground is filled with various vegetables and fruits, including green grapes, red tomatoes, purple cauliflower, and bunches of carrots. The background shows more produce and the structure of the market stall, with overhead lights visible. The overall scene is bright and colorful, emphasizing the freshness of the goods.

## SECTION 2

# Shifting dietary demand for protein

The increasing production of animal protein has a number of negative effects, including climate change, deforestation, biodiversity loss, pollution, and the inefficiencies created by growing feed crops to feed animals, rather than crops to feed human beings. Increasing the global population of livestock clearly increases opportunities for animal diseases to evolve and spillover to human populations, thus becoming zoonotic, as has been seen with Highly Pathogenic and Low Pathogenic Avian Influenza<sup>8</sup> or the 2009 swine flu pandemic (H1N1pdm09).

UNEP and ILRI's report states that in the last 50 years, meat production has grown by 260%, milk production has grown by 90% and egg production by over 340%.<sup>9</sup> Without intervention, this growth is expected to continue for the next few decades.

It is therefore critical to "bend the curve" on the production and consumption of animal-based proteins, and transform consumption patterns to be more "plant-rich." Reducing the global reliance on animal-based proteins will shrink the global livestock population, contribute to protecting varied ecosystems, reduce deforestation, provide opportunities for ecological restoration and reduce the interactions that are likely to result in spillover and disease transmission opportunities.

## Recommendations

- **Promote and ensure availability and affordability of healthy and sustainable diets.** The EAT-Lancet Commission has recommended diets that combine sustainability and health.<sup>10</sup> These diets are also low in animal proteins. A lower production of animal proteins will lead to a reduction in the numbers of animals reared for food, which will indirectly reduce the risk of zoonotic diseases due to human encroachment on pristine habitats and increased contacts with wildlife, while also directly reducing the risk of food-borne and non-communicable diseases. Diets that are low in animal protein must be promoted and mainstreamed, and the barriers for individual consumption of healthy and sustainable diets must be eliminated.
- **Internalise the externalities.** The 2020 State of Food Security and Nutrition Report by the Food and Agriculture Organization of the United Nations quantifies the hidden costs of

non-communicable diseases and climate impact associated with current global diets, and finds that if these hidden costs were to be incorporated into true cost accounting, current diets would cost on average 50% more.<sup>11</sup> Currently, the healthy, plant-rich diets recommended by the EAT-Lancet report remain unaffordable for many. It is critical to internalise the externalities of food production, shifting subsidies, incentives and tax architectures in order to make plant-rich, healthy and low-zoonotic risk diets affordable to all.

- **Provide education and awareness programs for healthy and sustainable diets in schools and for consumers of all ages.** Concomitant with this is the need for effective labeling schemes for food which enable consumers to make informed choices. These should include labels indicating the environmental footprint of various foods, similar to the labels which indicate energy consumption on appliances. For example, the EU is considering introducing harmonised mandatory front-of-pack nutrition labeling as well as an EU animal welfare label, which ideally should be underpinned by animal welfare indicators and include visual information for consumers on the method of production.
- **Tax foods that are unhealthy, unsustainable and which increase zoonotic risks.** A tax on unhealthy, unsustainable and risky food products will simultaneously incentivise healthy and low-risk diets. Such taxes have been proposed by the International Food Policy Research Institute,<sup>12</sup> and are currently being considered by the European Union.<sup>13</sup>
- **Invest in and increase financing for development and innovation of plant-based protein alternatives.** Developing healthy and sustainable protein alternatives can provide a segue away from high consumption levels of animal-based proteins.
- **Set standards for sustainable public procurement.** Public procurement must not cause negative environmental impacts, animal suffering or increase the risk of future pandemics. Further, public procurement should be leveraged to raise public awareness and shift norms towards healthier consumption patterns.

SECTION 3

# Transforming Agricultural Systems



In order to meet rising demand for animal-based proteins, the production of animals has been intensified, industrialised and globalised. This has had several undesirable effects on the lives (and livelihoods) of humans and on the welfare of animals.

## Industrial Animal Production and One Health

Animals produced *en masse* in industrial systems are genetically similar and bred for specific production traits rather than robustness or health, making them more at risk for disease and infection. The negative behaviors due to the stress, boredom and compromised health that result from living in inadequate conditions are addressed with painful mutilations, such as debeaking birds to eliminate feather pecking and tail docking in pigs to partially prevent tail-biting. Animals are raised at such high stocking densities that they become extremely prone to disease, as high stress levels result in compromised immune systems.<sup>14,15</sup> To enable the animals to survive in such conditions, antimicrobials are still employed in large quantities in global livestock production, thus contributing to the rising levels of antimicrobial resistance. In fact, approximately 80% of total consumption of medically important antibiotics is in the animal sector, largely for growth promotion in healthy animals.<sup>16</sup> This antimicrobial resistance poses a particular challenge because it is spread through animal waste.<sup>17</sup> Estimates indicate that the agricultural animals produce approximately four times more waste than humans.<sup>18</sup> Animal waste is not typically treated, establishing a major exposure point for antimicrobial resistance to the environment and humans.

This is true in aquatic as well as terrestrial systems. As Heuer et al. had warned in the journal *Clinical Infectious Diseases* a decade ago: *"Intensive use of antimicrobial agents in aquaculture provides a selective pressure creating reservoirs of drug-resistant bacteria and transferable resistance genes in fish pathogens and other bacteria in the aquatic environment [...]. Considering the rapid growth and importance of the aquaculture industry in many regions of the world and the widespread, intensive, and often unregulated use of antimicrobial agents in this area of animal production, efforts are needed to prevent development and spread of antimicrobial resistance in aquaculture to reduce the risk to human health."*<sup>19</sup>

Intensive animal agriculture can indirectly facilitate the "spillover" of viruses in wild animal populations to domestic animals. Animal waste is frequently poorly managed, increasing exposure risk to human populations through soil, air and water pollution.<sup>20,21</sup> The expansion of farmland into forests and wetlands puts farmed species into direct contact with wildlife such as bats and water fowl, serving as a bridge that can spread naturally occurring viruses to people, as well as facilitating access to wild animals for traders and traffickers.<sup>22</sup> Intensive and industrialised farms can also lead

to the evolution of more virulent pathogens. When thousands, or tens of thousands, of genetically identical animals are crowded together, they create a perfect 'mixing vessel' for the mutation of viruses, which can become more virulent, more deadly, or even spread to people.<sup>23,24</sup>

The last global pandemic before COVID-19, the 2009 swine flu, emerged from farm animals. This flu pandemic killed between 151,000 and 575,000 people worldwide.<sup>25</sup> As stated in the UNEP report on pandemics, "*since 1940, agricultural intensification measures such as dams, irrigation projects and factory farms have been associated with more than 25 per cent of all--and more than 50 per cent of zoonotic--infectious diseases that have emerged in humans.*"<sup>26</sup> Concomitant with decreased consumption levels of animal-based proteins, a transformation towards smaller, more sustainable, extensive and agro-ecological farming systems is necessary to reduce the risks of the next pandemic.

## **The Vulnerabilities of Industrial Animal Farming: a One Welfare Perspective**

The multiple vulnerabilities of industrial animal production have been fully exposed during the COVID-19 crisis, albeit to different degrees depending on the geographical region. Farmers' income was threatened or reduced due to disruptions in the supply chain. For example, the partial disruption of food supply chains compelled the EU to support the livestock sector by launching private storage schemes for milk and certain meat products. Worldwide, slaughterhouses and meat processing facilities were, and still remain, hotspots for new SARS-CoV-2 infections as workers' rights are not sufficiently guaranteed or enforced. Farmed animals also paid the price of such disruptions. In the United States, as a consequence of the reduced slaughtering capacity due to COVID-19, millions of farmed animals were killed (and disposed of) on-farm<sup>27</sup> with methods that sometimes violated OIE standards<sup>28</sup> (e.g., ventilation shutdown with additional heat or CO<sub>2</sub> for pigs or water-based foam for poultry).<sup>29</sup> In Ethiopia, one company estimated that it was forced to kill millions of chicks as the country's tourism industry, and demand for chicken meat, crashed.<sup>30</sup>

In the name of "food security," the industrialised and globalised livestock industry now heavily relies on an increasing trade in live animals, who are shipped over unacceptably long distances, including from one continent to another. These animals are often mixed at staging posts and in markets, to be further transported and end up in slaughterhouses that - in many cases - operate in violation of OIE standards.

Additionally, the Committee for Food Security High Level Panel of Experts stated in their 10th report that intensive agriculture contributes to rural abandonment, exposure of rural communities to pollution which has been linked to negative impacts on health, a higher risk of occupational hazards, lower wages and fewer jobs.<sup>31</sup> Intensive production contributes to market concentration, with smaller farms unable to compete with larger entities.<sup>32</sup> For example, a case study in Paraguay highlights how the expansion of cattle and soy for feed in the country "led to the loss of land of a million Paraguayans who have as a result become 'soy refugees' in the poverty belts or slums of Asunción and Paraguay's other large cities and towns."<sup>33</sup>

It is critical that food systems and supply chains are transformed in ways which increase their resilience, better contribute to human health and food security, are better for the environment and more humane for animals. The COVID-19 pandemic has exposed the need for One Welfare. As

perfectly summarised by Marchant-Forde and Boyle (2020):

*“This is a One Welfare issue, affecting human, animal, and environmental welfare and highlighting the fragility of intensive, high-throughput livestock production systems. This model needs to be re-shaped to include the animal, human, and environmental elements across the farm to fork chain. Such a One Welfare approach will ensure that food production systems are resilient, flexible, and fair in the face of future challenges.”<sup>34</sup>*

## Recommendations

- **End the intensive production of farmed animals by reducing stocking densities and eliminating the use of cages, crates and any other form of close confinement.** These conditions exacerbate the risk of disease emergence and spread. Instead, it is important to incentivise production systems and housing conditions which ensure healthier animals and a reduced reliance on antimicrobials.
- **Ensure a healthy and positive environment for farmed animals.** When livestock are farmed, it is necessary to improve farm conditions. This includes providing enrichment and the ability to engage in natural behaviors, taking full account of species-specific needs in order to reduce stress levels, eliminate the need for routine mutilations, and ensure healthier animals.
- **Reorient genetic selection away from extreme productivity at the expense of animal health and welfare.** Instead, genetic diversity should be valued for its ability to increase disease resistance and the resilience of animals in the face of climate change.
- **Adopt a precautionary, health-based approach by ending livestock markets, where animals are physically amassed and sold, as well as the international trade in and long-distance transport of live animals.** Ending these practices will significantly reduce the risk of zoonotic disease proliferation, spillover events and transmission across long distances.
- **End the prophylactic use of antimicrobials in farmed animals.** Antimicrobial resistance is a global threat, but interventions in the animal agriculture sector can strongly contribute to reducing this risk. The “WHO strongly recommends an overall reduction in the use of all classes of medically important antibiotics in food-producing animals, including complete restriction of these antibiotics for growth promotion and disease prevention without diagnosis” and that “Healthy animals should only receive antibiotics to prevent disease if it has been diagnosed in other animals in the same flock, herd, or fish population.”<sup>35</sup>
- **Establish strong and binding health and welfare regulations and enforcement regarding animal husbandry, transport, market and slaughter.** Improving the sanitation and conditions of these production stages will improve animal welfare and reduce zoonotic disease risk.
- **Transition towards regenerative agriculture and agro-ecological production systems that improve soil quality and contribute to biodiversity.** These systems provide a strong foundation for more sustainable and healthier food systems.



## SECTION 4

# Reducing use and exploitation of wildlife



The exploitation of wildlife for meat, recreational hunting, exotic pets, zoos, research and medical testing, and for the use of animal parts for commercial products, is increasing exponentially.<sup>36</sup> These uses increase the contact between animals and people at all stages of the supply chain, and thus also increase the risk of spreading disease. Of particular concern are markets at which live animals are sold, traded and slaughtered, usually in locations crowded with people and many species of animals under unhygienic conditions. Such markets have been the source of pandemics, including, most likely, COVID-19 itself, as well as SARS. Despite the consequences of COVID-19, wild-caught animals and captive-raised wild animals continue to be sold and slaughtered at markets in many countries.

As one “solution” to fuel the trade in wildlife, there has been a trend toward farming wild species in the belief that this would reduce pressure on wild populations. However, farming wild animals establishes a legal trade which allows for the laundering of wild-caught animals that are claimed to have been legally bred. This type of farming tends to be poorly regulated and conducted under conditions that violate basic animal welfare principles, and, for similar reasons as to those that increase risk of zoonotic disease emergence in intensive and industrial livestock systems, can further increase the risk of pathogenic mutation and disease spread.

Currently, there is an inordinate focus on wildlife uses that are considered “illegal, unregulated and high risk”. However, while these uses clearly need to be addressed, in and of itself this is an insufficient approach. Legality does not correspond to lower zoonotic risk; both the legal and illegal trade in wildlife and associated parts and products present risks for the emergence and spread of zoonotic disease. For example, a recent study found that the rate of infection of wildlife with coronaviruses increases in a stepwise fashion with each stage of the wildlife trade (capture, transport, market, etc.).<sup>37</sup> Thus, it is the commercial trade in wildlife as a whole that must be stopped in order to prevent future pandemics, through preventive and precautionary approaches.

A further problem in addressing the dangers of the wildlife trade is the concept of “sustainable use”, which has gained traction under the Convention for Biological Diversity (CBD). Despite the widespread application of sustainable use, the biodiversity crisis continues to grow. One reason for this is that there is not currently verifiable criteria by which the sustainability of most wildlife uses

can be assessed. Additionally, the current interpretation and application of sustainable use is that any use is acceptable (i.e. for luxury goods), so long as it falls below a certain threshold for species survival. This appears to have given carte blanche to the consumptive use of wildlife in many countries, for a variety of purposes, most of which are neither “sustainable,” necessary, nor humane. It simply is not realistic to expect that the use of wildlife could be regulated in a sustainable way when it involves so many species, across so many ecosystems, across so many regions, being traded for so many different purposes. Indeed, there is complexity even in the use of small numbers of animals: science has shown how a single animal bagged by a trophy hunter can destroy a whole family unit, disrupt wider populations and the ecosystems to which they belong, and lead to increased conflict between wildlife and people, thereby affecting the survival of an entire community.<sup>38</sup> The truth is that often “sustainable use” is a challenging concept to verify and apply in practice.

## Recommendations

- **Apply a precautionary approach to the commercial trade in wildlife in order to protect public health and prevent pandemics.** Live wildlife markets and commercial trade in wildlife must be better regulated now and eventually stopped altogether. Priority should be given to ending non-essential uses of wildlife, such as for the fashion industry, luxury food markets, trinkets and ornaments, traditional medicinal products, and entertainment.
- **End the farming of animals for fur and fashion.** COVID-19 has been found in animals on mink farms across Europe and the U.S., and in a handful of cases has been transmitted from mink back to humans,<sup>39</sup> resulting in over a million animals being culled in Europe alone,<sup>40</sup> and in the Dutch parliament voting to end mink farming.<sup>41</sup>
- **End the long distance transport of live wildlife and import-export schemes for wildlife.** Eliminating long-distance transport and trade will increase the possibility of containment for any possible disease outbreaks.
- **Complete a “just transition” to support those who currently rely on the commercial trade of wildlife, supporting them to move to other more sustainable, and safe, livelihoods.** For example, the African Union InterAfrican Bureau for Animal Resources (AU-IBAR) has called for support structures and safety nets to encourage alternative livelihoods to consumptive uses of wildlife, in order to “keep animals in the wild.”<sup>42</sup> This should include, as a priority, protective measures for indigenous people and local communities. Recovery funding should be directed towards the just transition and development of alternative livelihoods.
- **Establish strong regulation and control over any remaining uses of wildlife.** This should include precautionary regulation for capture, holding, transport, keeping and trade of live wildlife, and a concerted international effort to end the illegal wildlife trade, beginning with the establishment of a robust global agreement on tackling wildlife crime.
- **Reconsider the framing of “sustainable use.”** Instead, a new interpretation must emerge which would meaningfully reduce the risk of overexploitation, misuse and disease emergence, and which provides an ethical framework that balances benefit to humans against the harm inflicted to animals, species and habitats. The definition of “sustainable use” of

wildlife should be restricted to that which is considered truly necessary for human survival and well-being, rather than enabling and encouraging uses that are superfluous and nonessential. Further, following the experience of COVID-19 and its emergence, and the specter of future pandemics, it is critical to assess “sustainability” in a wider context that considers not only environmental sustainability, but also social sustainability and risks to human health and wellbeing, as well as economic impacts associated with the risk of zoonotic disease emergence. Lastly, it is also important to use the precautionary approach as a basis and take into account the future adverse impacts that will affect sustainability of activities in unforeseeable ways, such as the impact of climate change.

- **Mainstream animal health and welfare into all policy streams dealing with animals.** This should include the UN Environment Program, multilateral environmental agreements, and economic agendas, including national development plans.
- **Reverse habitat loss trends.** Habitat destruction for infrastructure such as roads and agricultural purposes destroys and fragments biodiversity, increases access to wildlife by humans and accelerates zoonotic disease emergence, and thus needs to be more carefully regulated and monitored.
- **Integrate the above-mentioned recommendations into the biodiversity-related Multilateral Environment Agreements.** This includes the upcoming fifteenth meeting of the Conference of the Parties to the Convention on Biological Diversity that will adopt a post-2020 global biodiversity framework.

A close-up photograph of a laboratory multi-well plate. A purple pipette tip is positioned over one of the wells, which contains a small amount of purple liquid. The plate is filled with many other wells, some containing clear liquid and others with a reddish-purple liquid. The background is blurred, showing more of the plate and laboratory equipment.

SECTION 5

# Vaccine development

Governments, researchers, and the private sector across the world are working to develop and test treatments, vaccines and methods to reduce the spread of the virus that causes COVID-19. Some of this research has defaulted to outmoded methods of research and development by focusing on animal models.

The animals used in these studies do not fully replicate the impact of COVID-19 on humans and so these research results can be of limited value. Only about 6% of potential vaccines that proceed to human trials actually make it through to market. Failures are typically due to safety concerns or simply because the vaccine did not work in humans. For example, a SARS vaccine was found to make people even more susceptible to the disease in a human trial.<sup>43</sup>

Further, these studies are inflicting tremendous suffering to the thousands of monkeys, cats, rats, hamsters, guinea pigs, ferrets and mice being used as test subjects and present an important ethical issue to weigh. The rapid development of an effective treatment and vaccine is critical, and therefore ensuring a globally coordinated and efficient research and development process is imperative.

## Recommendations

- **Focus research on humane and human-relevant methods.**
- **Coordinate research between countries and institutions.** Coordination is critical to avoid duplication and repeated testing on animals and ensure that research builds upon developing knowledge through data sharing. For example, all countries should follow the lead of the European Union in allowing synthetic rFC to be used to test for vaccine contaminant endotoxins, rather than relying on a cruelly-extracted element of horseshoe crab blood.<sup>44</sup>
- **Foster the continued development of New Approach Methodologies (NAMs),<sup>45</sup> which refers to “non-animal technology, methodology, approaches, or combination thereof that can be used to provide information on chemical hazard and risk assessment.”** More investment in NAMs is essential to achieving speedier validation and dissemination.

## SECTION 6

# Domestic animals and communities



When unprecedented events place greater pressure on existing resources and infrastructure, the subsequent impact on humans and animals within communities is closely interlinked. Inadequate consideration for the wellbeing of either can cause considerable detriment to both.

On the positive side, COVID-19 has led to the increase in companion animal adoptions and fostering in some regions.<sup>46</sup> However, in other regions abandonment has increased due to reasons such as economic constraints, loss of livelihoods and unsupported fears that companion animals can spread COVID-19.<sup>47,48</sup> Additionally, regions with larger populations of free-living stray animals that have experienced restrictions on activities and lockdowns have meant that stray dogs have been unable to find adequate food, which can lead to aggression.<sup>49</sup>

Further, in regions that depend heavily on working equids for traction and to transport food, water, and people, COVID-19 has brought challenges in providing food and medical care to these animals, and has increased abandonment.

An approximate global population of 200 million working animals help to build social and financial resilience for between 300 and 600 million people, as well as supporting environmental management and climate change adaptation.<sup>50</sup> They can be the only means by which people can afford and access day to day resources and services, including measures put in place as part of pandemic response and recovery. For families that are no longer able to care for their horses, donkeys or mules, or face deteriorating productivity from those exhausted by an increasingly demanding workload without appropriate husbandry or veterinary input, this represents the loss of a critical support system and a deteriorating quality of life for both the animals and the people who rely on them.

While enforced loss of a working animal can cause significant detriment to those experiencing it in its immediacy, the potential for abandonment can also cause unanticipated risks to human wellbeing on a wider scale. Wandering animals can inadvertently cause traffic accidents, encroach on agricultural land to source food<sup>51</sup> and present contamination and zoonotic disease vector issues if free-ranging with untreated health conditions.

To address these issues, many NGOs have stepped up emergency programmatic responses to provide food, shelter, and veterinary care for animals and extending existing efforts to empower local communities through knowledge-sharing with the resources needed to care for their horses, mules and donkeys.<sup>52</sup>

In both perception and policy, the importance of working animals outside of the traditional



“livestock” arena has only recently begun to be recognised, for example within the UN Sendai Framework for Disaster Risk Reduction 2015 – 2030, which explicitly recognises that working animals are crucial to people’s livelihoods and, as significant economic assets, must be protected from the effects of natural disasters.<sup>53</sup> However, there is much to be done to investigate and escalate the social, cultural and economic links between human and animal wellbeing, beyond local stakeholder experience and into global policy.

## Recommendations:

- **Address domestic and working animals in development policy and emergency programmes.** Despite their invaluable role and contribution within communities, domestic and working animals remain largely excluded from development and emergency programmes. From the social and cultural benefits of companion animals to the socioeconomic value of working livestock,<sup>54</sup> inadequate protection of these animals impacts wellbeing and recovery in the wake of health emergencies and natural disasters.
- **Animal care should be designated an essential activity by governments.** This designation ensures that feeding, sterilization and vaccination programs for dogs and veterinary care for working equids can continue during the pandemic.
- **Animal protection measures, such as increased financial provision, veterinary training and service and focused research and reporting, should be included within future development, disaster recovery and climate change adaptation plans.** This inclusion allows a holistic approach and prevents interlinked issues such as human, animal and environmental welfare being tackled in isolation.
- **Veterinary and biosecurity training initiatives should be supported at community level.** This will prevent rural, agricultural and marginalised populations with significant human-animal interaction from being placed at greater risk.

SECTION 7

# Key Global Actions to Prevent Future Pandemics



These policies, through a One Welfare approach, must be mainstreamed across the international policy environment in order to prevent future pandemics and “build back better”. However, at this time we believe that the UN General Assembly, UN Environment Programme, the Convention on Biological Diversity’s Post-2020 Global Biodiversity Framework, and international financial institutions involved in financing and stimulus packages in the wake of COVID-19 have an outsized role in ensuring progress on this front.

## **United Nations General Assembly**

Decisions of the United Nations General Assembly are representative of global opinion. The General Assembly can “make recommendations to promote international political cooperation, the development and codification of international law, the realisation of human rights and fundamental freedoms, and international collaboration in the economic, social, humanitarian, cultural, educational and health fields.”<sup>55</sup> COVID-19 has demonstrated that the way animals are treated locally can have massive health, economic, social and humanitarian impacts globally. The ways in which animal health and welfare have been dealt with in policy silos far removed from human and environmental concerns have also contributed to the vulnerabilities that led to the emergence and spread of COVID-19. For this reason a concerted multilateral action towards a One Health and One Welfare approach at the level of the General Assembly would be critical to reducing future pandemic risks created by exploitation of animals, as well as reducing other risks exploitation contributes to, such as climate change and biodiversity loss. Some recommended actions for the UN General Assembly include:

- Recognition of World Animal Day on 4th October, creating an annual opportunity to examine progress, take action and make commitments to improve humans’ relationship with animals, making transformative change towards a One Health and One Welfare approach and eliminating silos.
- Making a declaration towards One Welfare and animal welfare, such as through the Universal Declaration for Animal Welfare.
- Establishing a multilateral agreement, such as a convention, on animal welfare which addresses One Health and One Welfare. As noted in the July 2020 Report of the Secretary

General on Harmony with Nature, “Throughout its 75-year history, the United Nations has given a voice to the voiceless. Responsibility now lies with the Organisation to be the champion of non-anthropocentrism and a voice on behalf of the natural world and to play a lead role for a twenty-first century global Earth-centred transition, in which the lives of all human and non-human species matter.”<sup>56</sup> Such a convention would eliminate problematic silos, provide the much needed leadership and momentum at the global level to take transformative action, leverage the synergies between human wellbeing, environmental health and animal welfare, and achieve Harmony with Nature.

## UN Environment Programme (UNEP)

UNEP, by releasing its report on *Preventing the Next Pandemic*, has set an important precedent in focusing on *prevention* rather than *reaction* in the context of COVID-19. This approach is critical and must be adopted by other international bodies. However, the report falls short of the scientifically supported actions, particularly in relation to wildlife, needed in order to truly mitigate risk of future pandemics.

- UNEP must incorporate a One Health and One Welfare approach, especially in light of the report UNEP published on *Preventing the next Pandemic*.<sup>57</sup>
- As stated by the Wildlife Conservation Society, bolder action is needed: commercial wildlife markets for human consumption and the associated trade must be closed.<sup>58</sup> UNEP must provide ambitious and visionary leadership in this respect.
- The theme of UNEA-5 is *Strengthening Actions for Nature to Achieve the Sustainable Development Goals*, and has a strong focus on “nature-based solutions” and sustainable consumption and production. As the latter features heavily in increasing our risk of future pandemics, through consumption of wildlife and increasing demand for intensively farmed animal-based proteins, it is critical that these issues are meaningfully addressed in the UNEA-5 Ministerial Declaration, resolutions and any other related agreements developed in the course of UNEA-5, by supporting the transition to plant-based diets and away from consumptive uses of wildlife, including policies to ensure a just transition.
- UNEP must push for an ambitious and science-based outcome of the 2021 Food Systems Summit. This should include strong support for policies enabling a transition to healthy, sustainable and safe plant-rich diets and for more sustainable, safe and humane agricultural practices, in order to reduce future pandemic risk and other existential environmental threats.
- UNEP must take a leadership role in approaching other international organisations, including international financial institutions and Member States, in discouraging the financing and support for industrial animal production, wildlife trade and land conversion and infrastructure developments that fragment and destroy natural habitats.

## International Financial Institutions (IFIs) and National Recovery Programs

International Financial Institutions (IFIs) and national recovery programs play a critical role in shaping future development and production patterns. What they fund, or do not fund, fundamentally

determines the future trajectory on these issues and is central to both “building back better” and preventing future pandemics.

- IFIs should adopt a One Welfare approach when considering their investments.
- IFIs and national recovery programs should ensure that funding is not used to support the commercial wildlife trade and/or the capture, farming, marketing, transport or import/export of wildlife, in order to prevent the potential emergence or spreading of future pandemics.
- Funding should not result in land conversion and infrastructure developments that fragment and destroy natural habitats, disrupting ecosystem functionality, placing enormous stresses on wildlife, and bringing people and wild animals into ever closer contact.
- Stimulus/recovery packages should only be deployed which offer incentives for more sustainable and nature-positive activities, in line with a recent Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) expert guest article “COVID-19 Stimulus Measures Must Save Lives, Protect Livelihoods, and Safeguard Nature to Reduce the Risk of Future Pandemics.”<sup>59</sup> As the article stated, “although it may be politically expedient at this time to relax environmental standards,” for example, continuing to ignore the impacts of industries such as the commercial wildlife trade and intensive agriculture, “would essentially subsidise the emergence of future pandemics.”
- IFIs and national recovery programs should also cease to support industrial animal production, as this is clearly linked to increasing risks of zoonotic emergence. Instead IFIs should consider alternatives to animal-based proteins and more sustainable regenerative and agro-ecological production practices.
- IFIs and national recovery programs should ensure investment in humane, human-relevant and future-facing science and research with better predictability for the effects of vaccines and treatments in humans.

## UN Development Programme (UNDP)

The UN Development Programme (UNDP) is an agency of the UN tasked with enabling progress in development for nearly 170 countries. UNDP works to accelerate structural transformations and build resilience to crises and shocks and plays a key role in helping countries achieve the Sustainable Development Goals. To accomplish this, UNDP promotes “integrative solutions.” This is “an approach to development that targets systems – not just thematic sectors – to address all aspects of a complex challenge, including its root causes and its ripple effects across economies, societies and natural ecosystems.”<sup>60</sup> However, despite this approach, UNDP does not mention the importance of One Health in their efforts to respond to COVID-19, although UNDP does highlight the interconnections between people and planet and notes that the risk of pandemics from zoonoses have been presaged for many years.

- With UNDP as a leading agency in crisis response and SDG implementation, it is critical, and fitting, that UNDP employs a One Health and One Welfare approach in its arsenal of integrative approaches.
- UNDP should build off the findings of UNEP’s report on pandemic prevention by identifying and championing solutions and just transitions in order to mainstream healthy and plant-rich diets, healthier, more sustainable and humane production where livestock is farmed, and reduce the exploitation of wildlife through commercial trade, thereby accelerating structural

changes in human-animal interfaces and building resilience against future pandemics and other crises like climate change and biodiversity loss.

## Convention on Biological Diversity (CBD)

Through the Global Biodiversity Framework (GBF) which will replace the expiring Aichi Biodiversity Targets in 2021, CBD has an unprecedented opportunity to break from “business as usual” and recommend a truly transformative approach, as recommended by IPBES and so many other recent reports from various UN agencies.

- CBD must develop meaningful GBF targets and, importantly, create an enabling environment for their implementation. Currently, it is clear that a number of the drafted GBF targets have been weakened when compared to their analogs in the Aichi Biodiversity Targets. Further, in light of COVID-19 it is critical that the GBF incorporates a One Health and One Welfare approach.
- The concept of sustainable use must be reevaluated, particularly because it has failed to deliver positive results in stemming the trend of biodiversity loss. A new understanding, or even a new paradigm, which includes an ethical framework that considers harm to animals and uses a precautionary approach, taking into account tangential threats like climate change, is needed to ensure that biodiversity, nature and animals are truly protected.

## G20

The G20 plays an important role in setting the agenda for governments, the private sector and other multilateral institutions to follow on expected trends and positioning led by the world's largest economies. Important agreements to work on specific issues of global importance have come through the G20 as the seat of important debates.

- In April G20 Health Ministers confirmed their alignment with the One Health approach and called for strengthened mechanisms for monitoring, early warning, preparedness, prevention, detection, response, and control of zoonotic diseases, and developing science-based international guidelines on stricter safety and hygienic measures for zoonosis control.
- We ask G20 leaders to recognise that live wildlife markets and the commercial trade in wildlife must be better regulated now and eventually stopped altogether. A ban in the global commercial trade in wildlife is a crucial step towards reducing the chances of global zoonotic pandemics like COVID-19.

## Sustainable Procurement by International Institutions and for International Meetings

- All international institutions, such as UN headquarters, UN Environment, Multilateral Environmental Agreements such as the Convention on Biological Diversity, Convention on Migratory Species, CITES and others must take a leading role in shifting food choices at their offices and during meetings. Food offered at meetings should reflect sustainable practices, eliminating reliance on industrially produced foods and increasing plant-rich options.

# SIGNATORIES

1. 50by40
2. ACTAsia
3. Alliance for Earth, Life, Liberty & Advocacy
4. Ananta Jyoti Dhayn Kendra
5. Andhra Pradesh Goshala Federation
6. Animal Rights Center Japan
7. Animals' Angels
8. Animals Asia Foundation
9. Animals Australia
10. Animal People
11. ARCA Brasil
12. Asia for Animals
13. A Well Fed World
14. Big Cat Rescue
15. Born Free Foundation
16. Brighter Green
17. CATCA Environmental and Wildlife Society
18. Catholic Concern for Animals
19. Change for Animals Foundation
20. Coalition of African Animal Welfare Organizations
21. Compassion in World Farming
22. Cruelty Free International
23. Dierencoalitie
24. EAST
25. Elephanatics
26. Eyes on Animals
27. Eurogroup for Animals
28. Federation of Indian Animal Protection Organisations
29. Forgotten Animals
30. FOUR PAWS International
31. Fraternité pour le respect animal
32. Friends of the Orangutans Malaysia
33. Global Animal Law
34. GREY2K USA Worldwide
35. Help Animals India
36. Himalayan Animal Rescue Trust
37. In Defence of Animals, India
38. International Aid for Animals Foundation
39. InterNICHE (International Network for Humane Education)
40. INUCOBO Animap Protection Association
41. Japan Anti-Vivisection Association
42. Lady Freethinker
43. Landmark Foundation
44. Liberia Chimpanzee Rescue and Protection
45. Melbourn Dolphin
46. NSPCA South Africa
47. One World Actors Animal Rescues
48. Reacción Climática
49. Pan African Sanctuary Alliance
50. People for Animals, Odisha
51. PETA Asia 亚洲善待动物组织
52. Plants and Animals Welfare Society (PAWS Asia)
53. ProVeg International
54. Pro Wildlife
55. RAPAD Maroc
56. Sanctuary for Health & Reconnection to Animals & Nature
57. Sea First Foundation
58. SEY Animal Welfare Finland
59. Sinergia Animal
60. S.P.A.R.E.
61. Society for Travelers Respecting Animal Welfare
62. Soi Dog Foundation
63. Sophia Society for the protection of animals
64. Stripes and Green Earth Foundation
65. Unexpected Wildlife Refuge
66. Wild Welfare
67. Wildlife Alliance
68. WTG
69. World Animal Net
70. World Animal Protection

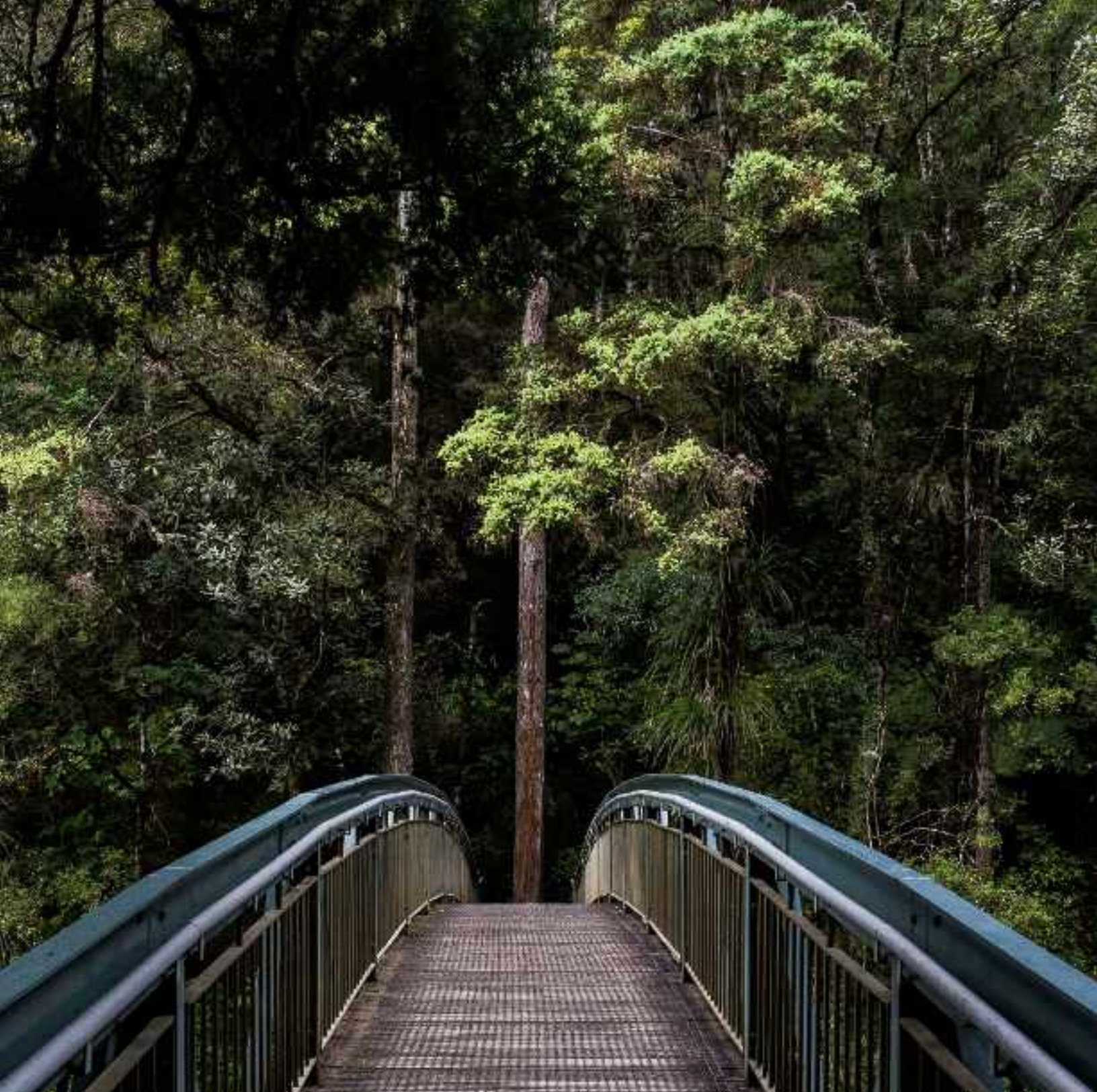
# REFERENCES

- <sup>1</sup> World Health Organization. [WHO Coronavirus Disease \(COVID-19\) Dashboard](#). Accessed 2 October 2020.
- <sup>2</sup> Cassim, Z; Handjiski, B.; Schubert, J. and Zouaoui, Y. [The \\$10 trillion rescue: How governments can deliver impact](#). McKinsey & Company. 5 June 2020.
- <sup>3</sup> World Bank. [The Global Economic Outlook During the COVID-19 Pandemic: A Changed World](#). June 8 2020.
- <sup>4</sup> Randolph DG, Refisch J, MacMillan S, et al. 2020. [Preventing the Next Pandemic: Zoonotic diseases and how to break the chain of transmission](#). United Nations Environment Program and International Livestock Research Institute. Nairobi, Kenya.
- <sup>5</sup> Dobson, A.P., Pimm, S.L., Hannah, L., Kaufman, L., Ahumada, J.A., Ando, A.W., . . . Vale, M.M. [Ecology and economics for pandemic prevention](#). *Science*. 24 July 2020. Vol. 369, Issue 6502, pp. 379-381. doi: 10.1126/science.abc31895
- <sup>6</sup> [One Welfare](#).
- <sup>7</sup> Independent Group of Scientists appointed by the Secretary-General. [Global Sustainable Development Report 2019: The Future is Now – Science for Achieving Sustainable Development](#). United Nations, New York. 2019.
- <sup>8</sup> U.S. Centers for Disease Control. [Influenza Type A Viruses](#). Accessed 24 September 2020.
- <sup>9</sup> Randolph DG, Refisch J, MacMillan S, et al. 2020. [Preventing the Next Pandemic: Zoonotic diseases and how to break the chain of transmission](#). United Nations Environment Program and International Livestock Research Institute. Nairobi, Kenya. Livestock Research Institute. Nairobi, Kenya.
- <sup>10</sup> Willet, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., et al. 2019. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet*. Vol. 393, Issue 10170, pp. 447-492 . doi: [https://doi.org/10.1016/S0140-6736\(18\)31788-4](https://doi.org/10.1016/S0140-6736(18)31788-4).
- <sup>11</sup> FAO, IFAD, UNICEF, WFP and WHO. [The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets](#). Rome, FAO. 2020.
- <sup>12</sup> D’Croz, D.M., Wiebe, K. and Robins, S. D’CROZ. [Taxing red meat may cut emissions and disease](#). International Food Policy Research Institute. 2016.
- <sup>13</sup> Murray, T. [The steaks are too high: EU considers introduction of 'meat tax' to fight climate change](#). *EuroNews*. 2 May 2020.
- <sup>14</sup> M. A. Sutherland, S. R. Niekamp, S. L. Rodriguez-Zas, and J. L. Salak-Johnson, “Impacts of chronic stress and social status on various physiological and performance measures in pigs of different breeds,” *J. Anim. Sci.*, vol. 84, no. 3, p. 588, 2006.
- <sup>15</sup> C. S. Wilcox, M. M. Schutz, M. R. Rostagno, D. C. Lay, and S. D. Eicher, “Repeated mixing and isolation: Measuring chronic, intermittent stress in Holstein calves1,” *J. Dairy Sci.*, vol. 96, no. 11, pp. 7223–7233, Nov. 2013.
- <sup>16</sup> World Organisation for Animal Health. [Chapter 7.6. Killing of Animals for Disease Control Purposes](#).
- <sup>17</sup> Graham, D.W., Bergeron, G., Bourassa, M.W., Dickson, J., Gomes, F., Howe, A., Kahn, L.H., Morley, P.S., Scot, H.M., Simjee, S., Singer, R.S., Smith, T.C., Storrs, C., and Wittum, T.E. 2019. [Complexities in understanding antimicrobial resistance across domesticated animal, human, and environmental systems](#).
- <sup>18</sup> Berendes, D.M., Yang, P.J., Lai, A.Hu, D. and Brown, J. 2018. [Estimation of global recoverable human and animal faecal biomass](#). *Nature Sustainability*. 1, 679–685.
- <sup>19</sup> Heuer, O.E., Kruse, H., Grave, K., Collignon, P., Karunasagar, I., Angulo, F.J. [Human health consequences of use of antimicrobial agents in aquaculture](#). *Clinical Infectious Disease*. 2009 Oct 15;49(8):1248-53. doi: 10.1086/605667.
- <sup>20</sup> Hooda PS, Edwards AC, Anderson HA, and Miller A. 2000. A review of water quality concerns in livestock farming areas. *The Science of the Total Environment*. 250 : 143-167.
- <sup>21</sup> United States Environmental Protection Agency. 2004. [Risk Management Evaluation for Concentrated Animal Feeding Operations](#).



- <sup>22</sup> Jones B et al, 2013. [Zoonosis emergence linked to agricultural intensification and environmental change](#). *PNAS*. 110 (21) 8399-8404; <https://doi.org/10.1073/pnas.1208059110>.
- <sup>23</sup> Dhingra, Artois, Dellicour et al. 2018. Geographical and Historical Patterns in the Emergences of Novel Highly Pathogenic Avian Influenza (HPAI) H5 and H7 Viruses in Poultry. *Frontiers in Veterinary Science* 5:84.
- <sup>24</sup> Lycett SJ, Duchatel F, and Digard P. 2019. [A brief history of bird flu](#). *Philosophical Transactions of the Royal Society B* 374: 20180257.
- <sup>25</sup> Centres for Disease Control and Prevention. [2009 H1N1 Pandemic \(H1N1pdm09 virus\)](#). Accessed 12 April 2020.
- <sup>26</sup> Randolph DG, Refisch J, MacMillan S, et al. 2020. [Preventing the Next Pandemic: Zoonotic diseases and how to break the chain of transmission](#). United Nations Environment Program and International Livestock Research Institute. Nairobi, Kenya.
- <sup>27</sup> M. Corkery and D. Yaffe-Bellany. [Meat Plant Closures Mean Pigs are Shot or Gassed Instead](#). *New York Times*. 14 May 2020.
- <sup>28</sup> World Organisation for Animal Health. [Chapter 7.6. Killing of Animals for Disease Control Purposes](#).
- <sup>29</sup> Marchant-Forde, J. and Boyle, L.A. 2020. COVID-19 [Effects on Livestock Production: A One Welfare Issue](#). *Frontiers in Veterinary Science*. <https://doi.org/10.3389/fvets.2020.585787><sup>30</sup> Bryan, B. [Individuals Matter Among Africa's Wild Animals](#). *National Geographic*.
- <sup>30</sup> The Poultry Site. 20 July 2020. [Ethiopian poultry producers cull thousands of chicks as COVID-19 hits hotel sector](#). *The Poultry Site*.
- <sup>31</sup> HLPE. 2016. Sustainable agricultural development for food security and nutrition: what roles for livestock? A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.
- <sup>32</sup> Ikert, J. [Crisis and Opportunity: Sustainability in American Agriculture](#). Presented at the 2019 Biosolids Conference, Michigan Water Environmental Association, Southfield, MI. 13 March 2019.
- <sup>33</sup> Lovera, M. [The Environmental and Social Impacts of Unsustainable Livestock Farming and Soybean Production in Paraguay: A Case Study](#). Centro de Estudios e Investigacion de Derecho Rural y Reforma Agrara de la Universidad Catolica de Asuncion.
- <sup>34</sup> Marchant-Forde, J. and Boyle, L.A. 2020. COVID-19 [Effects on Livestock Production: A One Welfare Issue](#). *Frontiers in Veterinary Science*. <https://doi.org/10.3389/fvets.2020.585787>
- <sup>35</sup> World Health Organization. 7 November 2017. [Stop using antibiotics in healthy animals to prevent the spread of antibiotic resistance](#).
- <sup>36</sup> Randolph DG, Refisch J, MacMillan S, et al. 2020. [Preventing the Next Pandemic: Zoonotic diseases and how to break the chain of transmission](#). United Nations Environment Program and International Livestock Research Institute. Nairobi, Kenya.
- <sup>37</sup> Gorman, J. [Wildlife Trade Spreads Coronaviruses as Animals Get to Market](#). *The New York Times*. 19 June 2020.
- <sup>38</sup> Bryan, B. [Individuals Matter Among Africa's Wild Animals](#). *National Geographic*.
- <sup>39</sup> Enserink, M. [Coronavirus rips through Dutch mink farms, triggering culls to prevent human infections](#). *Science Magazine*. 9 June 2020.
- <sup>40</sup> Machemer, T. [Covid-19 Reaches Mink Farms in Utah](#). *Smithsonian Magazine*. 20 August 2020.
- <sup>41</sup> Haines, Gavin. [Dutch parliament votes to end mink farming following Covid-19 outbreak](#). *Positive.News*. 24 June 2020.
- <sup>42</sup> African Union InterAfrican Bureau for Animal Resources. [AU-IBAR concerned over COVID-19 Impact and Risks to the Wildlife Sector and implications on Wildlife Trade from future Pandemics](#). 1 July 2020.
- <sup>43</sup> Sample, I. [Why we might not get a coronavirus vaccine](#). *The Guardian*. 22 May 2020.
- <sup>44</sup> Gorman, J. [Tests for Coronavirus Vaccine Need This Ingredient: Horseshoe Crabs](#). *The New York Times*. 21 July 2020.
- <sup>45</sup> Interagency Coordinating committee on the Validation of Alternative Methods. [A Strategic Roadmap for Establishing New Approaches to Evaluate the Safety of Chemicals and Medical Products in the United States](#). November 2017.
- <sup>46</sup> Genovese, D. and Moore, C. [Pet adoptions rise during coronavirus stay-at-home orders](#). *Fox Business*. 21 April 2020. <sup>47</sup> [A/75/266](#)
- <sup>47</sup> Campbell, C. ['They Are Overwhelmed.' China's Animal Shelters Can't Cope With the Number of Pets Abandoned Due to COVID-19](#). *Time*. 2 March 2020.

- <sup>48</sup> Lakshmin, D. [Amid the world's strictest lockdown, people who feed stray dogs are now deemed essential](#). *National Geographic*. 8 May 2020.
- <sup>49</sup> Ghosh, S and Aggarwal, M. [Slim pickings for strays and pets during COVID-19 lockdown](#). *Mongabay* 31 March 2020.
- <sup>50</sup> Rodrigues, J.B., Schlechter, P., Spychiger, H., Spinelli, R., Oliveira, N. & Tomas de Figueiredo. (2017). The XXI century mountains: sustainable management of mountainous areas based on animal traction. *Open Agriculture*. 2 (1) pp. 300-307
- <sup>51</sup> The Donkey Sanctuary. [Feral Donkeys](#).
- <sup>52</sup> [International Coalition for Working Equids \(ICWE\)](#).
- <sup>53</sup> United Nations Office for Disasters Risk Reduction. [Sendai Framework for Disaster Risk Reduction 2015 – 2030, 2015](#).
- <sup>54</sup> Geiger M., Hockenull J., Buller H., Tefera Engida G., Getachew M., Burden F.A. and Whay H.R. Understanding the Attitudes of Communities to the Social, Economic, and Cultural Importance of Working Donkeys in Rural, Peri-urban, and Urban Areas of Ethiopia. 2020. *Front. Vet. Sci.* 7:60.
- <sup>55</sup> United Nations. [Functions and powers of the General Assembly](#).
- <sup>56</sup> [A/75/266](#)
- <sup>57</sup> Randolph DG, Refisch J, MacMillan S, et al. 2020. [Preventing the Next Pandemic: Zoonotic diseases and how to break the chain of transmission](#). United Nations Environment Program and International Livestock Research Institute. Nairobi, Kenya.
- <sup>58</sup> Wildlife Conservation Society. [Statement from the Wildlife Conservation Society Regarding UN Environment Programme Report on Zoonotic Disease](#). 7 July 2020.
- <sup>59</sup> Settele, J., Díaz, S., Brondizio, E., and Daszak, P. 27 April 2020. COVID-19 [Stimulus Measures Must Save Lives, Protect Livelihoods, and Safeguard Nature to Reduce the Risk of Future Pandemics](#). *IPBES*.
- <sup>60</sup> United Nations Development Programme (UNDP). [SDG Integration](#).



For more information, contact Jessica Bridgers  
[jessica@worldanimal.net](mailto:jessica@worldanimal.net)

Join us in creating a more  
**sustainable, equitable, and humane** world,  
and *prevent the next pandemic.*